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OCTOBER 1973, No. 10

FISHING INFORMATION

UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

NATIONAL
MARINE
FISHERIES
SERVICE

OUTHWEST
FISHERIES
CENTER
LA JOLLA,
ALIFORNIA

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
SOUTHWEST FISHERIES CENTER
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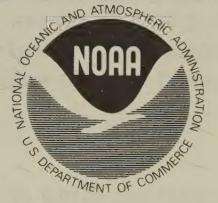
FISHING INFORMATION

OCTOBER 1973 , No. 10



B. J. Rothschild, Director, SOUTHWEST FISHERIES CENTER
I. Barrett, Deputy Director
R. Shomura, Director, Honolulu Laboratory

PREFACE

This publication, Fishing Information, appears monthly and contains 1) fishery advisory information, 2) a narrative description of pertinent surface temperature conditions, 3) a narrative description of subsurface temperature structure for parts of the North Pacific, 4) charts of winds and pressures for the eastern North Pacific, 5) charts of sea surface temperature for the North Pacific and eastern tropical Pacific, and 6) charts of subsurface temperature structure in the eastern North Pacific.

A supplement to Fishing Information appears at 15-day intervals throughout the year. This is a chart of sea surface temperature (contoured at 2°F (1°C) intervals) from Baja California to Vancouver Island out to about 135°W. Special bulletins are published in conjunction with the 15-day sea surface temperature charts which include short-term projections of albacore distribution and locations of productive fishing areas, information on oceanographic and atmospheric conditions, and other information as is appropriate during the albacore fishing season.

L.E. Eber, Leader
Fishery Information Systems
Southwest Fisheries Center
La Jolla, California

Submitted for publication - November 20, 1973

Sea Surface Temperature and Environmental Conditions

L. EBER AND F. MILLER

Eastern North Pacific

Seasonal cooling of surface waters from September-October 1973 was somewhat less than normal in most of the region north of 40°N. This was particularly noticeable between latitudes 45° and 50°N, west of 160°W, where negative departures from the long-term means were reduced from more than 4° F (2.2° C) in September to less than 2° F (1.1° C) in October.

Surface cooling in areas south of 40°N occurred at various rates, both above and below normal. In general, however, temperatures continued to be predominantly cooler than normal (Figure 5) and negative departures up to 6° F (3.3° C) persisted off Baja California.

Atmospheric sea level pressures were higher than normal over most of the region west of 135° W, except in the northern Gulf of Alaska. Positive departures from the long-term mean reached 8 millibars just north of 45° N, between 165° and 170°W (Figures 1 and 2). Atmospheric circulation during the month was characterized by transient systems and changing patterns and the correlation with anomalous changes in ocean temperatures is not readily seen.

Western North Pacific

Sea surface temperature conditions in the western north Pacific revealed a changing anomaly pattern between September and October 1973. Waters north of 40°N, which had been cooler than normal, became mostly warmer than normal. Conditions in areas adjacent to Honshu also shifted from below- to above-normal temperatures; however, departures in the vicinity of Hokkaido remained negative (Figure 6). Temperature anomalies in areas 200-800 miles east of Japan changed from positive to negative.

Eastern Tropical Pacific

October 1973 marks the third month in which the large-scale sea surface temperature pattern has changed very little from the previous month. There has been a general cooling trend throughout the tropical Pacific with the exception of a large positive temperature anomaly east of 105°W, between the equator and 5°N (Figure 10). Just south of this feature, a negative anomaly has persisted resulting in an intensified equatorial front east of the Galapagos Islands (Figure 9). The equatorial front is also stronger than usual between 120°W and 150°W due to upwelling maintained by persistent southeast trades.

Subsurface Temperature Structure in the Northeast Pacific Ocean

J.F.T. SAUR

Observations of subsurface temperature were begun in October along the ship route between Honolulu and Los Angeles. A section taken during early October along this track by the SS Hawaiian Enterprise is shown in Figure 10. Due to equipment failure no observations are available for early October along the regular route between San Francisco and Honolulu; however, two sections of observations along this route were made at mid-month by the SS Hawaiian Enterprise and the Pacific Far East Line passenger vessel, SS Monterey (Figures 11 and 12). The ships were traveling in opposite directions so that those observations near longitude 137°N are contemporaneous whereas observations at the California end of the sections are separated by about 2 days and at the Honolulu end by about 4 days. Both sections are presented here for those who may be interested in the combined effects of small-scale oceanic variability in time and space, missing observations, and instrumental errors upon the presentation of data by such sub-surface temperature sections.

Mixed layer depths deepened and became very well defined during the month of October. Mixed layer depths were consistently around 50 m at almost all stations except on the eastern half of the Los Angeles-Honolulu section where they were 5-10 m shallower. Typically, as the mixed layer deepens through surface cooling and vertical mixing, the upper portion of the thermocline becomes very sharp. This is particularly noticeable in the central part of the sections.

Along the San Francisco-Honolulu sections the boundary between the waters of the California Current and Transition Zone appeared to be located near 132°W longitude, about 500 nautical miles off the California Coast. The boundary between the Transition Zone and the Eastern North Pacific Central Water lay near 141°W longitude, about 1000 miles off the coast. The identifying features of this boundary are the steep downward slope to the west of the subsurface isotherms and the westward increase of surface salinity from below to above 35.0‰. With the development of well defined mixed layers an increase in the horizontal gradient of temperature in the mixed layer is becoming discernible at each of the boundaries of the Transition Zone. Within the Zone the vertical profiles of temperature do not exhibit the complexity that they do in the late spring.

Along the Honolulu-Los Angeles section (Figure 10) we know from historical data that the California Current continues southward from the Pt. Arguello-Pt. Conception region. The lowest surface salinity and the shallowest thermocline indicate that the main flow of the California Current crosses the section around 123°-124°W longitude. The Transition Zone does not appear as well defined along this section as along the Honolulu-San Francisco San Francisco section. The boundary between it and the waters of the California Current appears to lie around 129°W longitude, between Stations 18 and 19, and the boundary with the Eastern North Pacific Central waters about 134°-135°W longitude, near Station 15. The orientation of the Transition Zone off central and southern California is thus WNW to ESE, which is in agreement with that which has been found by Southwest Fisheries Center research vessels on pre-season albacore surveys.

Although the west coast albacore fishing season is over we will continue to shade the 16°-19°C (61°-66°F) temperature range in the sections to watch its seasonal movement. The position of this zone at the surface changed very little since September and it was still located in the California Current. In this region the 16°C (61°F) isotherm lay within the sharp thermocline, so that the bottom of the 16°-19°C (61°-66°F) temperature zone was consistently 60-70 m in depth. The zone deepened west of 132°W and was below the surface layer throughout the Transition Zone and in the region of the Northeast Pacific Central water.

Airborne Infrared Sea Surface Temperature Survey Off San Diego

J.L. SQUIRE

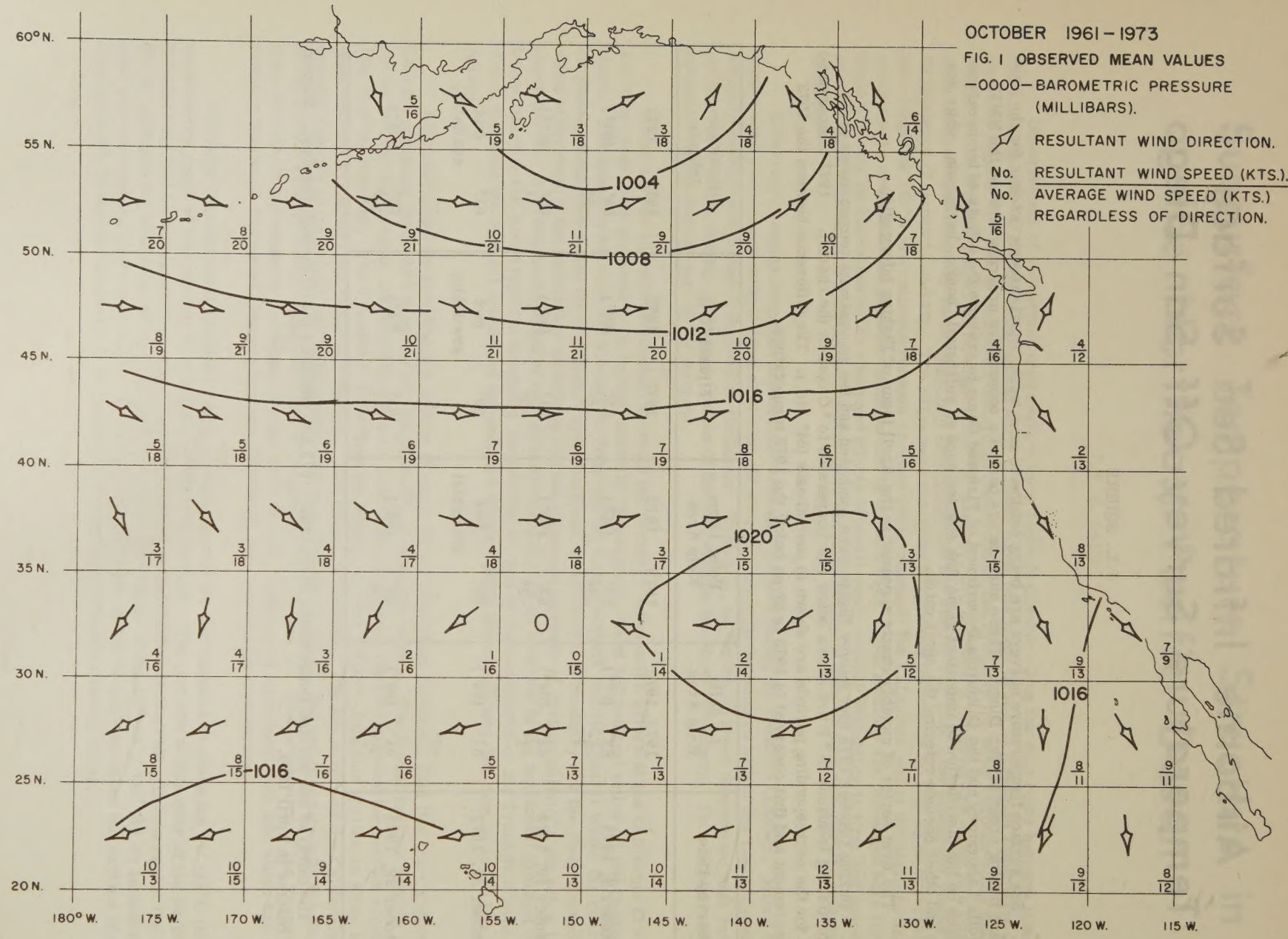
Sea surface temperature surveys are being conducted each week, April through October for the important fishing areas off San Diego. These surveys are part of a cooperative program between the NMFS La Jolla Laboratory and the California Department of Fish and Game to evaluate the effects of temperature changes on the distribution of important game fish species such as yellowtail, bonito, barracuda, white sea bass and other species entering the sport catch.

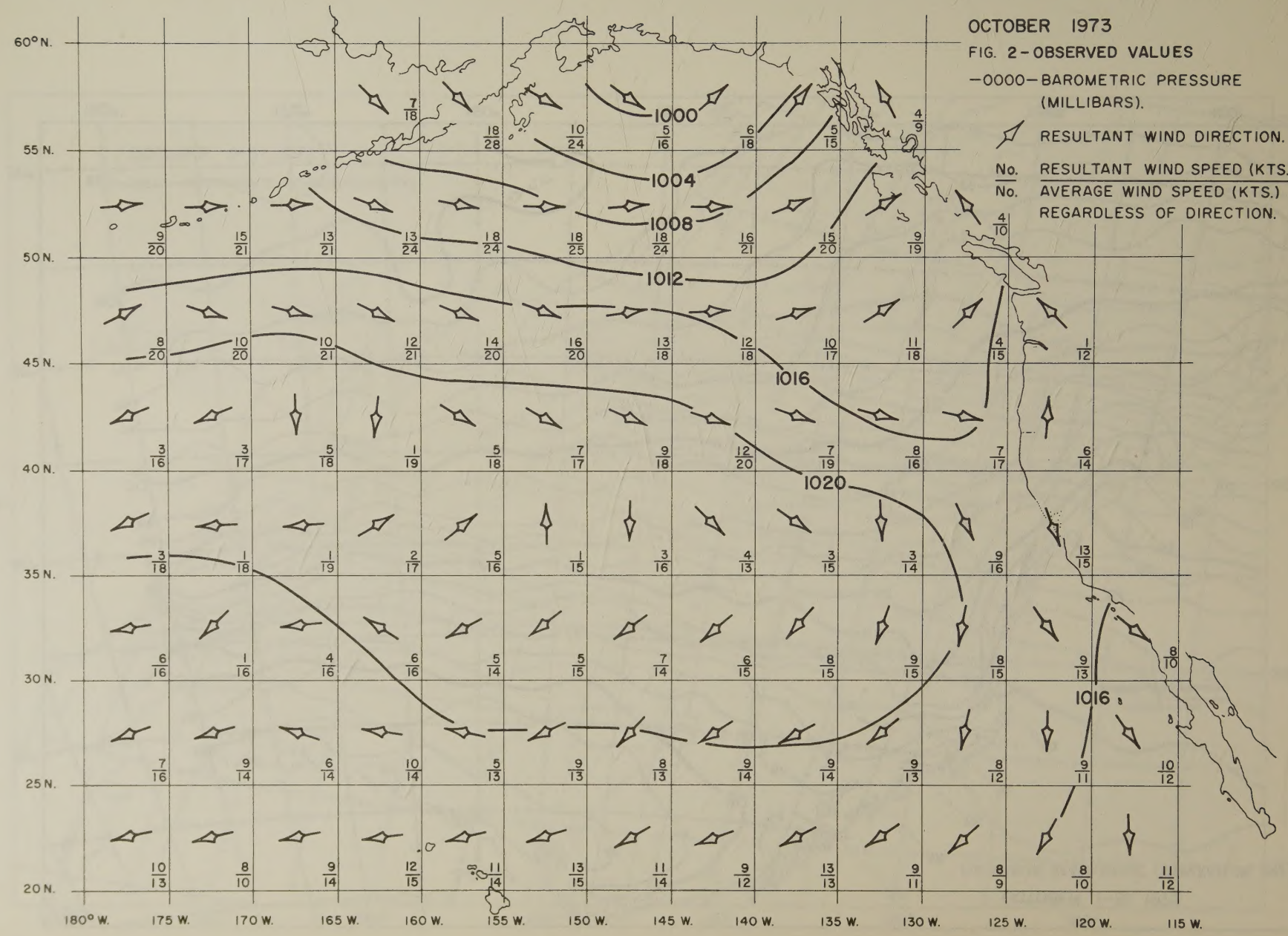
The first series of monthly charts appeared in the April issue of Fishing Information.

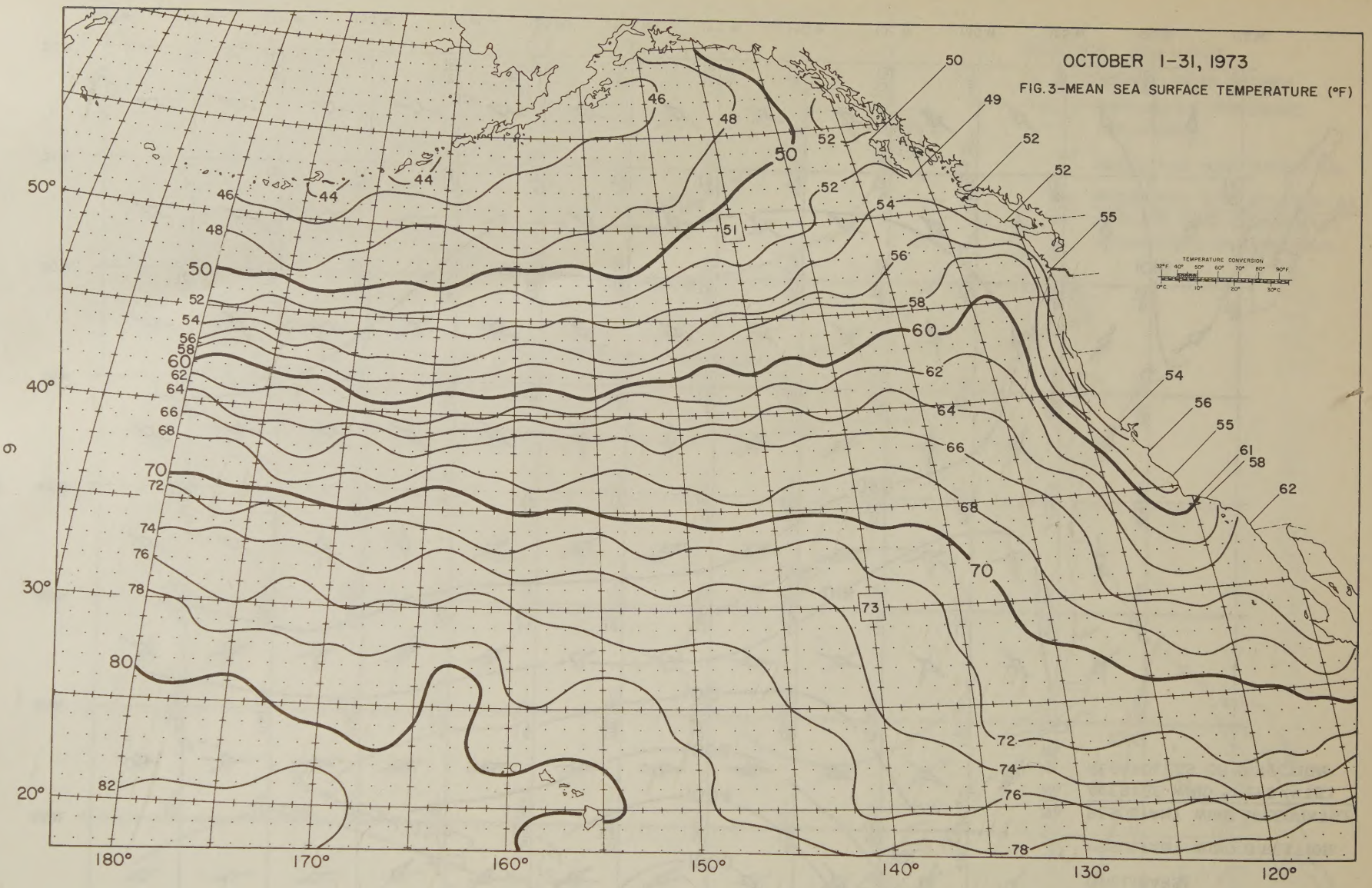
During October 1973 four survey flights were conducted and the approximate temperatures at the major fishing locations in °F are shown below (for conversion to °C consult the charts). 1972 temperature data for the corresponding periods are shown in parenthesis (64° etc.). The difference between the 1972 measurement and that observed in 1973 is given below the 1973 temperature.

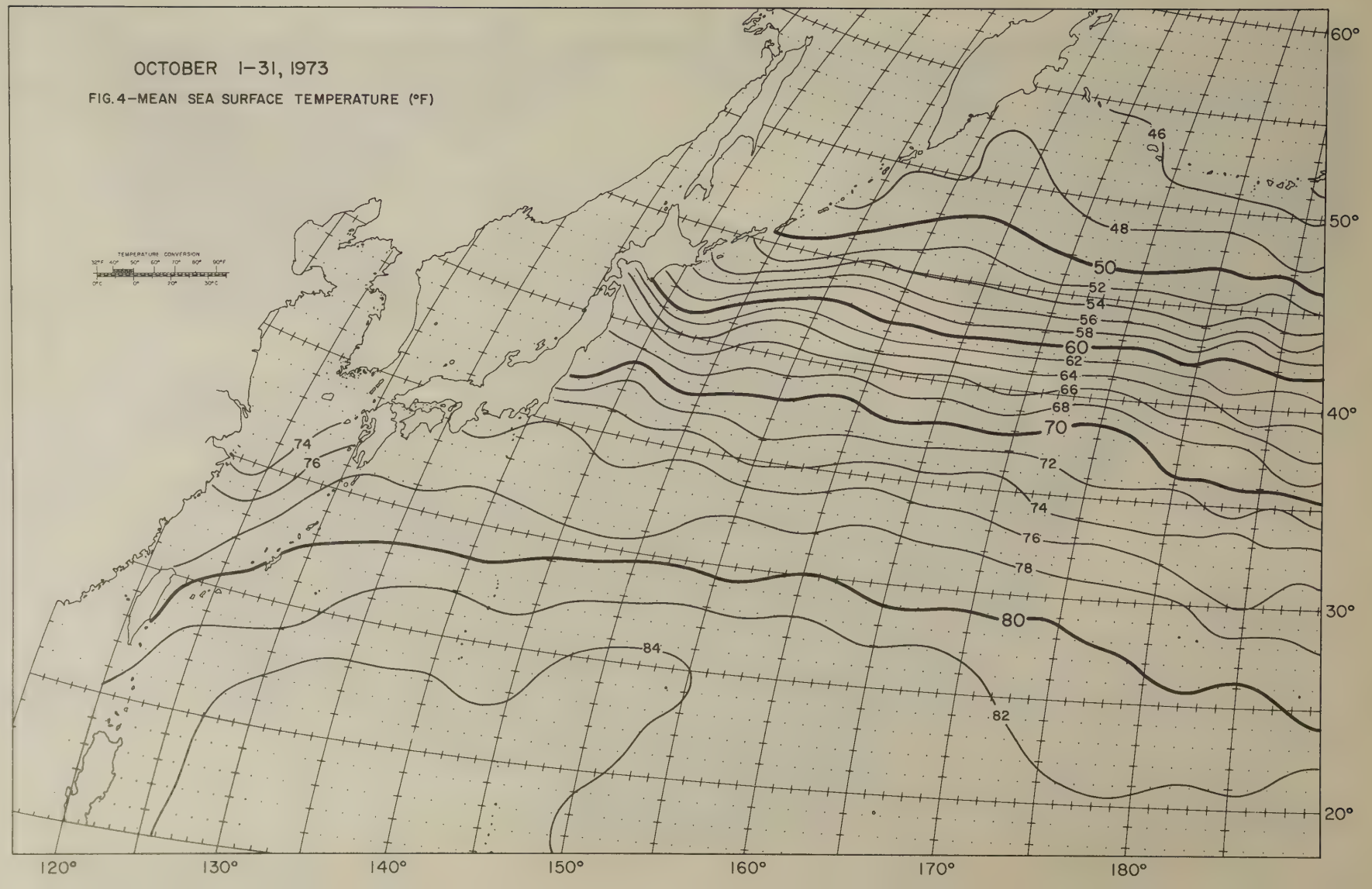
Survey Date	La Jolla Kelp Area		Point Loma Kelp Area		Tijuana Kelp		Coronado Islands	
	1973	1972	1973	1972	1973	1972	1973	1972
October 9, 1973	63° -4°	(67°)	63° -2°	(65°)	62° -5°	(67°)	63° -5°	(68°)
October 19, 1973	63° -1°	(64°)	63° -2°	(65°)	61° -3°	(64°)	64° -2°	(66°)
October 24, 1973	57° -7°	(64°)	58° -	(not available)	59° -	(not available)	61° -	(not available)
October 29, 1973	61° +1°	(60°)	62° +2°	(60°)	62° +1°	(61°)	65° +4°	(61°)

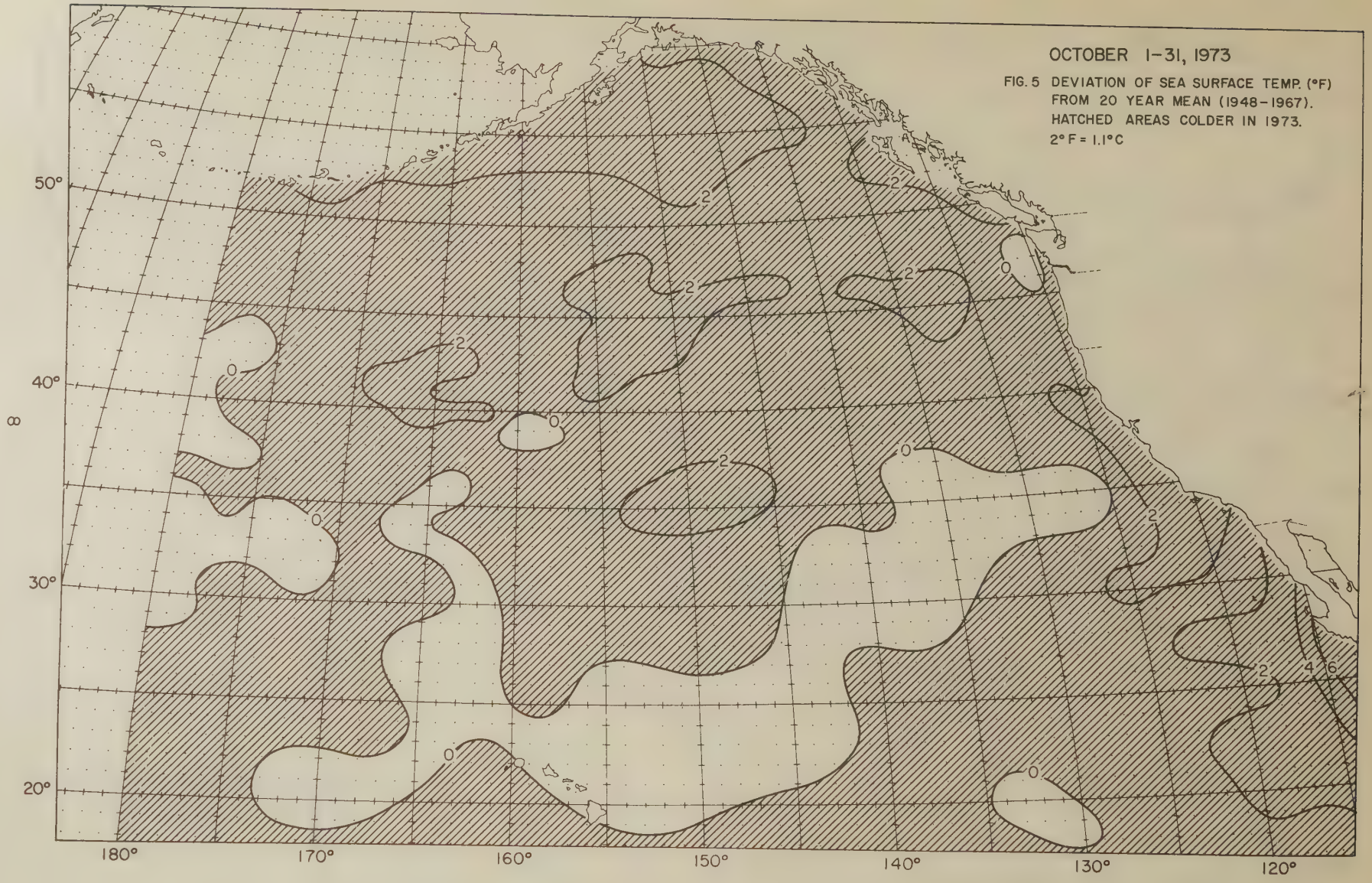
The infrared sea surface temperature surveys for 1973 are complete (April through October). Surveys will resume in April 1974.

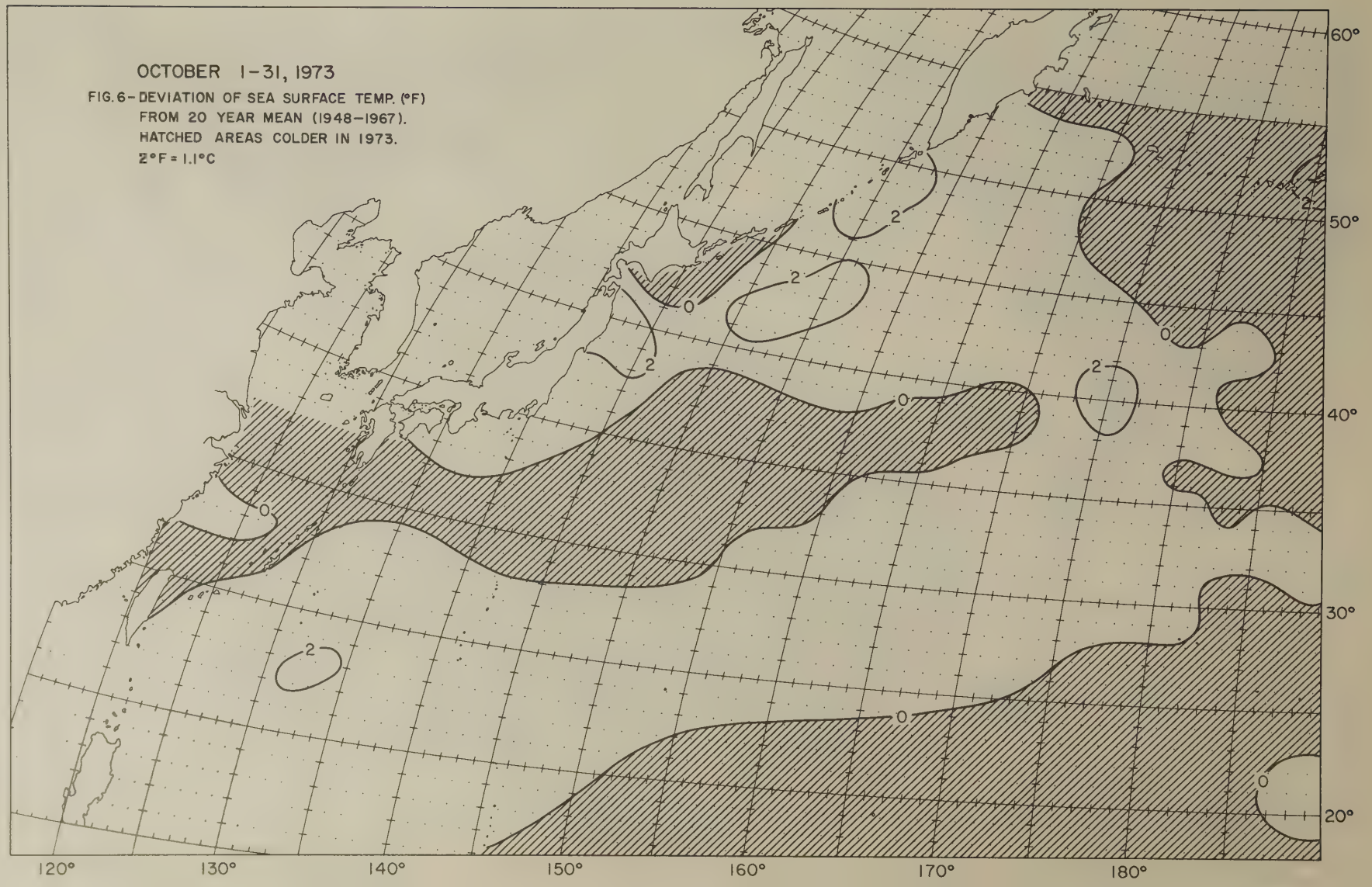

OCTOBER 1961 – 1973
FIG. 1 OBSERVED MEAN VALUES
—0000— BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. RESULTANT WIND SPEED (KTS.).
No. AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
1004
1008
1012
1016
1020
1016
1016
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.

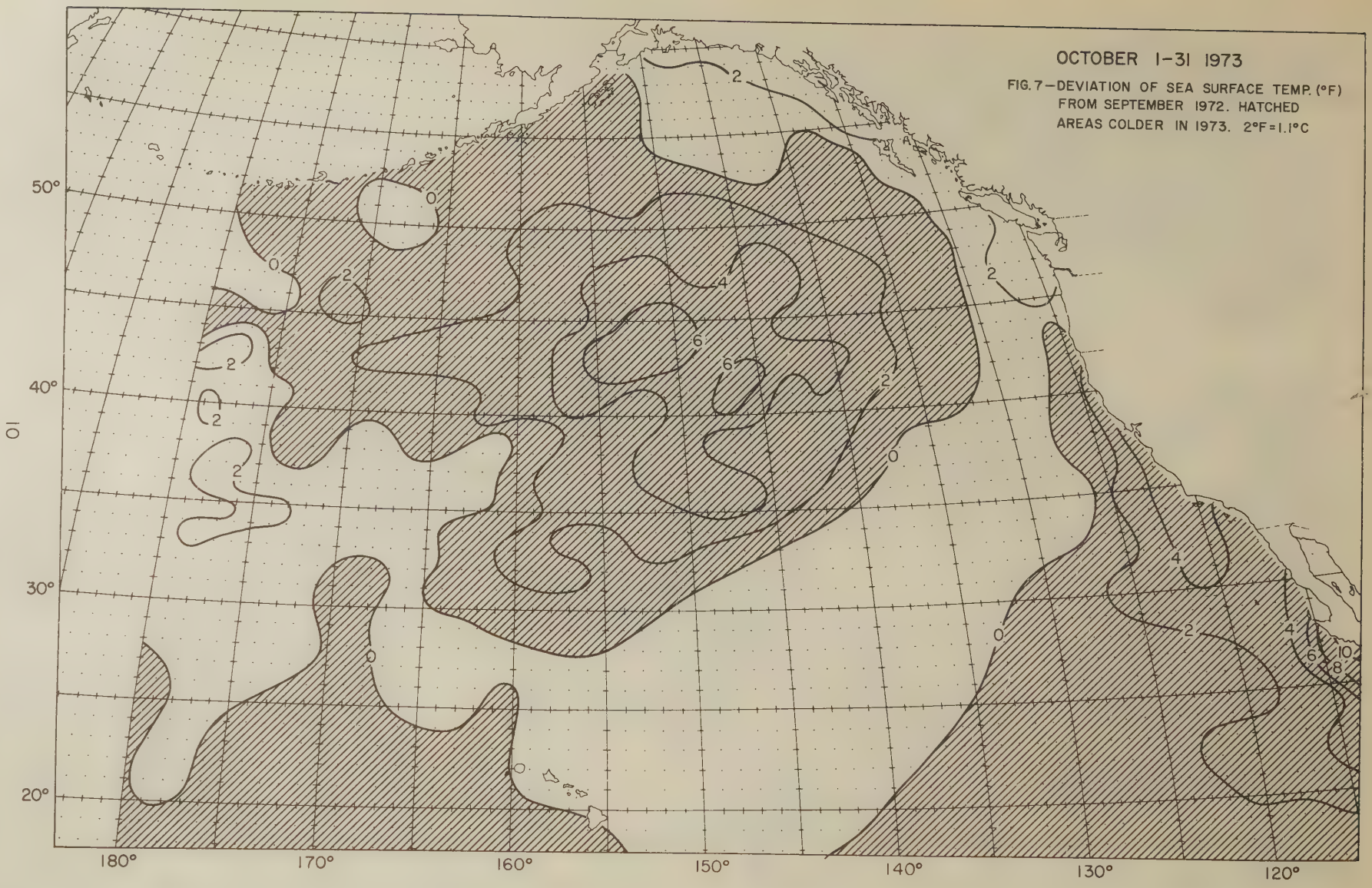

OCTOBER 1973
FIG. 2 - OBSERVED VALUES
—0000— BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. RESULTANT WIND SPEED (KTS.).
No. AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
1000
1004
1008
1012
1016
1020
1016
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.

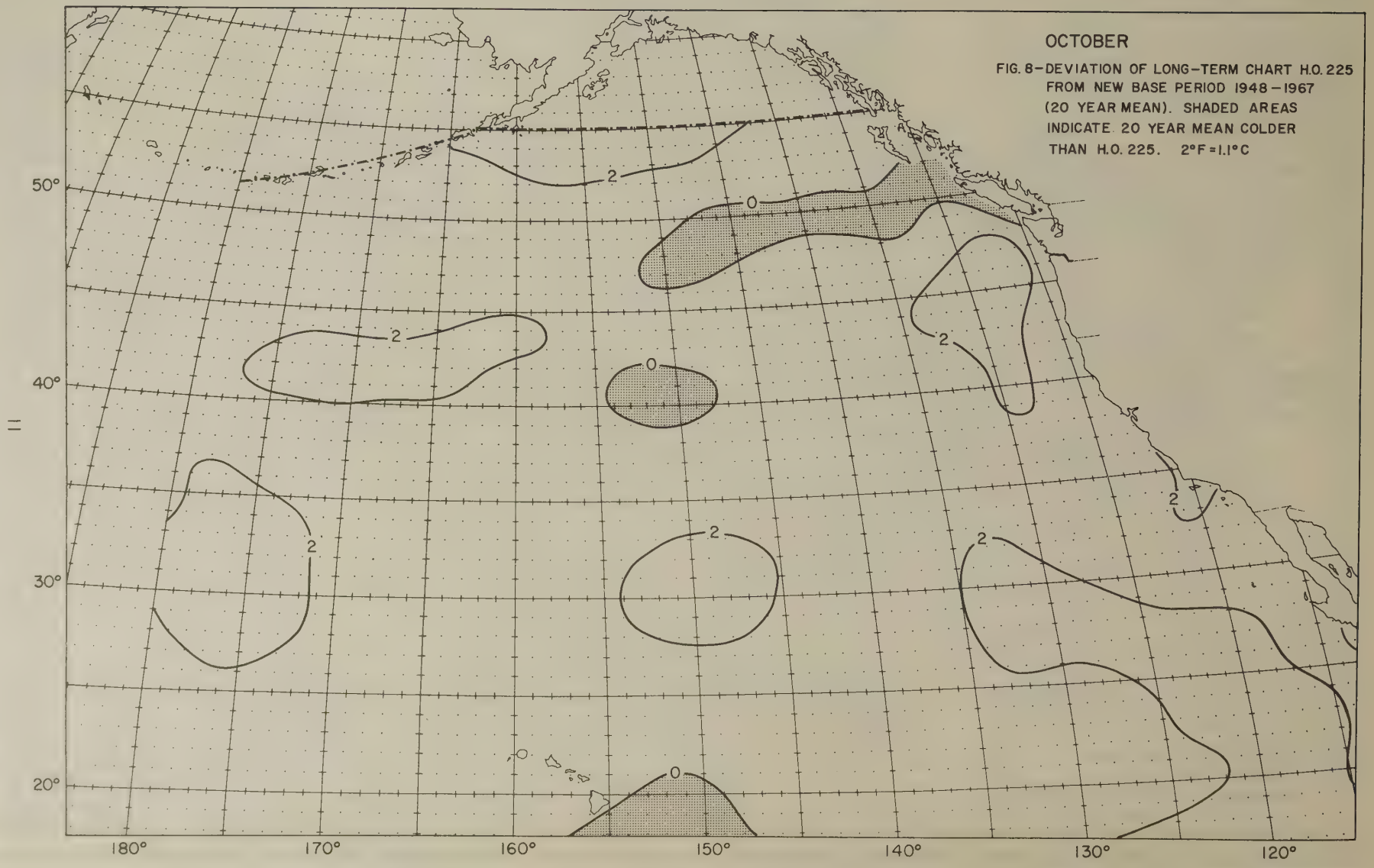

OCTOBER 1-31, 1973
FIG.3-MEAN SEA SURFACE TEMPERATURE (°F)
TEMPERATURE CONVERSION
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
46
48
50
52
54
56
58
60
62
64
66
68
70
72
74
76
78
80
82
44
49
55
61
51
73

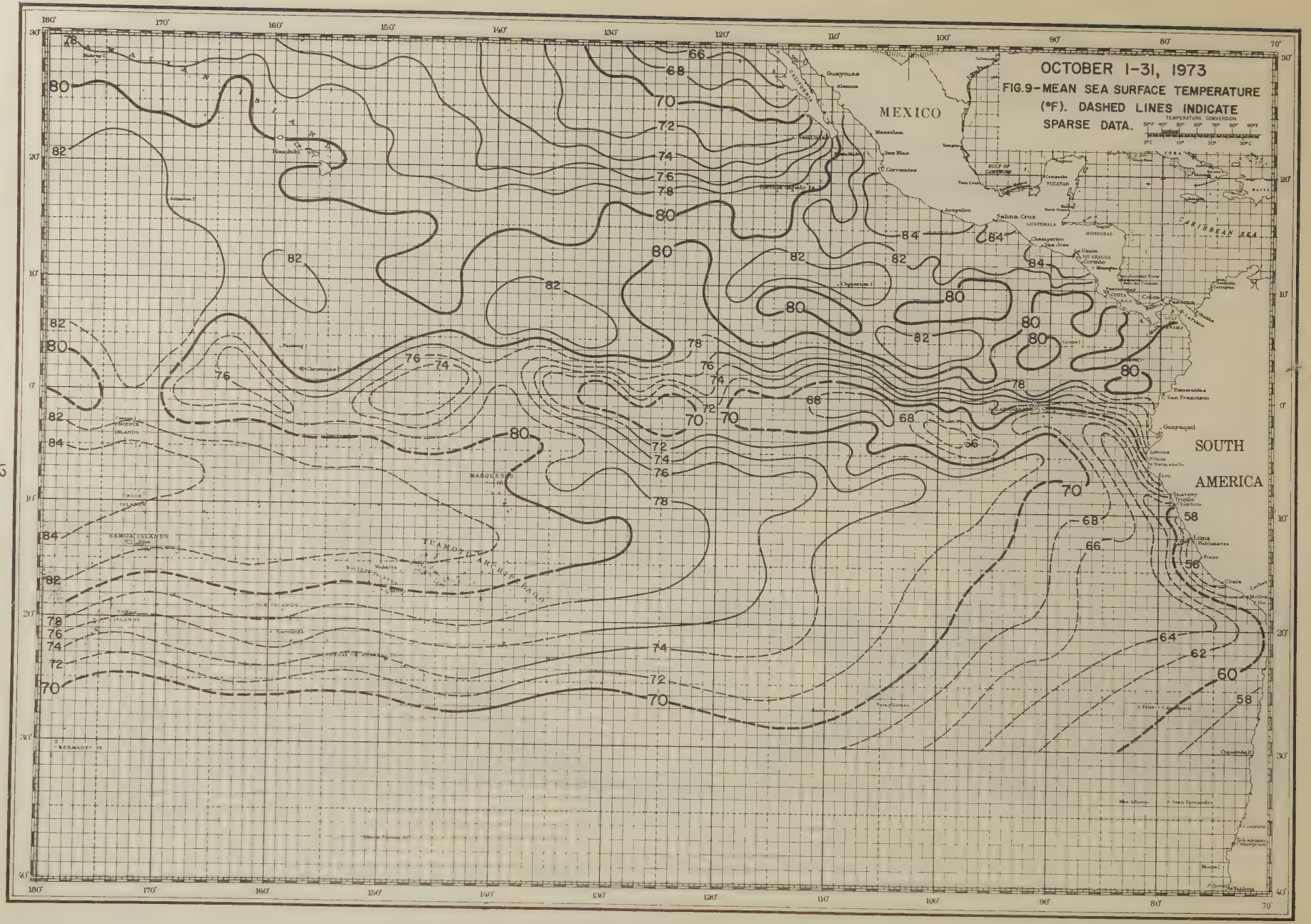

OCTOBER 1–31, 1973
FIG. 4–MEAN SEA SURFACE TEMPERATURE (°F)
TEMPERATURE CONVERSION
32°F 40° 50° 60° 70° 80° 90°F
0°C 10° 20° 30°C
46
48
50
52
54
56
58
60
62
64
66
68
70
72
74
76
78
80
82
84
60°
50°
40°
30°
20°
120°
130°
140°
150°
160°
170°
180°

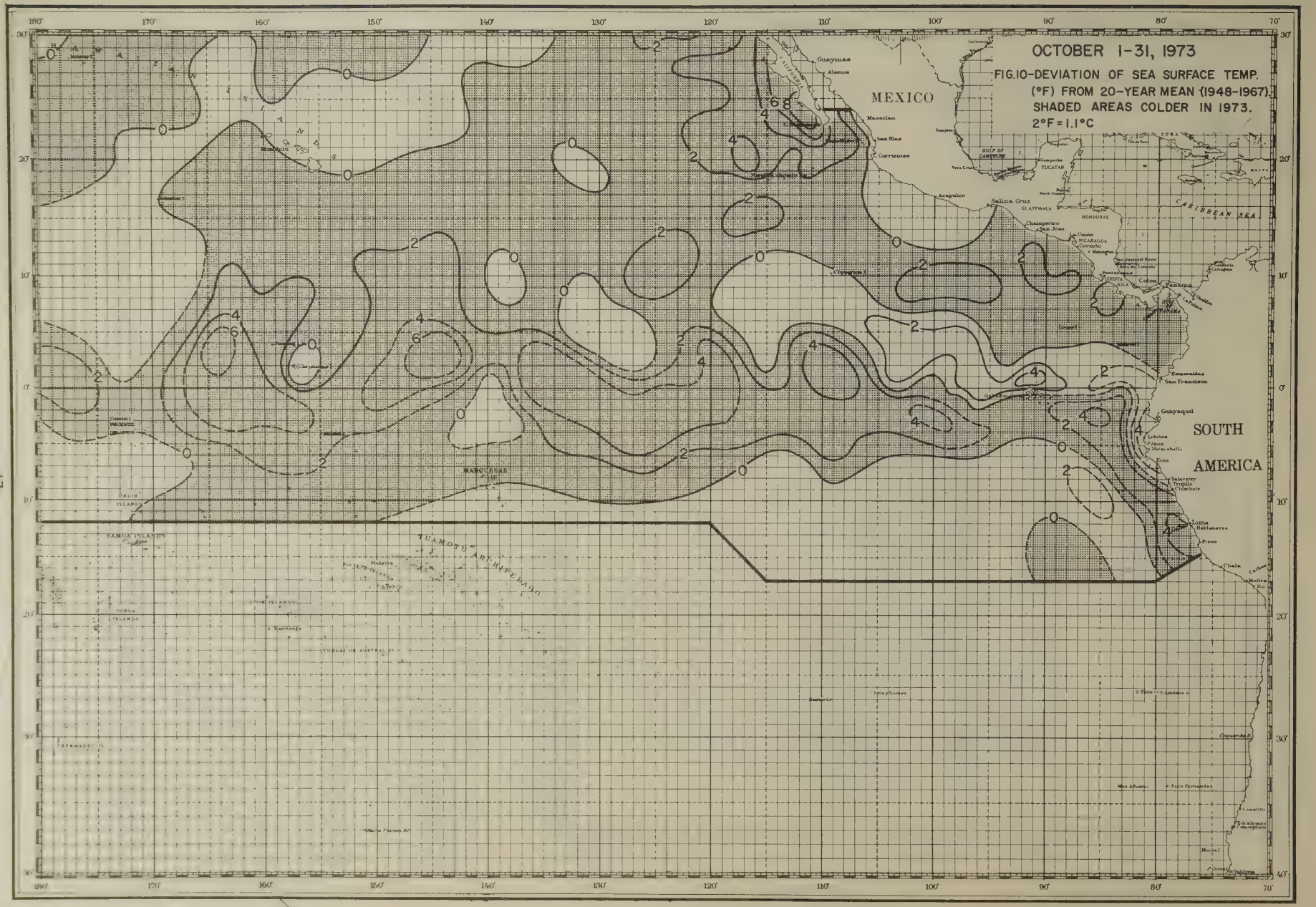

OCTOBER 1-31, 1973
FIG. 5 DEVIATION OF SEA SURFACE TEMP. (°F) FROM 20 YEAR MEAN (1948-1967). HATCHED AREAS COLDER IN 1973.
2° F = 1.1° C
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
0
2
4
6


OCTOBER 1-31, 1973
FIG. 6 - DEVIATION OF SEA SURFACE TEMP. (°F)
FROM 20 YEAR MEAN (1948-1967).
HATCHED AREAS COLDER IN 1973.
2°F = 1.1°C
60°
50°
40°
30°
20°
120°
130°
140°
150°
160°
170°
180°
0
2


OCTOBER 1-31 1973
FIG. 7—DEVIATION OF SEA SURFACE TEMP. (°F) FROM SEPTEMBER 1972. HATCHED AREAS COLDER IN 1973. 2°F = 1.1°C
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
0
2
4
6
8
10

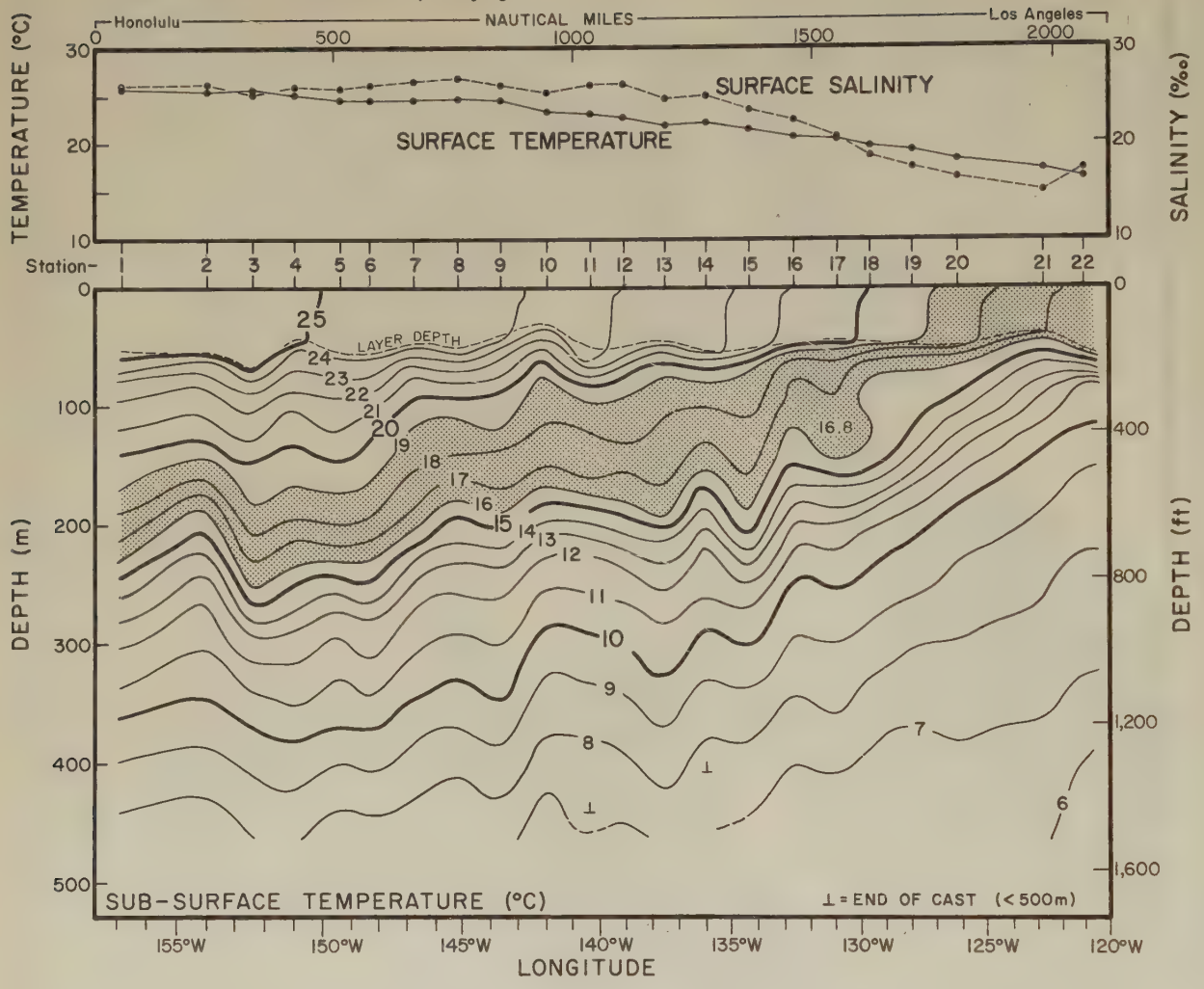

OCTOBER
FIG. 8–DEVIATION OF LONG–TERM CHART H.O. 225 FROM NEW BASE PERIOD 1948–1967 (20 YEAR MEAN). SHADED AREAS INDICATE 20 YEAR MEAN COLDER THAN H.O. 225. 2°F = 1.1°C
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
2
0

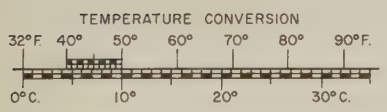

OCTOBER 1-31, 1973
FIG.9-MEAN SEA SURFACE TEMPERATURE (°F). DASHED LINES INDICATE SPARSE DATA.
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
HONDURAS
GUATEMALA
NICARAGUA
COSTA RICA
PANAMA
COLOMBIA
ECUADOR
PERU
CHILE
Honolulu
Acapulco
Salina Cruz
Guayaquil
Lima
Callao
Valparaiso
Easter I.
Galapagos Is.
Marquesas Is.
Tuamotu Archipelago
Samoa Islands
Phoenix Islands
Union Islands
Tonga Islands
Cook Islands
Kermadec Is.
Juan Fernandez Is.
TEMPERATURE CONVERSION


OCTOBER 1-31, 1973
FIG.10-DEVIATION OF SEA SURFACE TEMP. (°F) FROM 20-YEAR MEAN (1948-1967). SHADED AREAS COLDER IN 1973.
2°F = 1.1°C
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
GUATEMALA
HONDURAS
NICARAGUA
COSTA RICA
PANAMA
Guaymas
Mazatlan
San Blas
C. Corrientes
Acapulco
Salina Cruz
Champerico
San Jose
Corinto
Managua
Colon
Panama
Esmeraldas
San Francisco
Guayaquil
Lobitos
Talara
Salaverry
Trujillo
Chimbote
Lima
Callao
Pisco
Chala
Mollendo
Arica
Iquique
Antofagasta
Juan Fernandez
Mas Afuera
Mas a Tierra
HAWAIIAN ISLANDS
Honolulu
Kauai
Niihau
Maui
Hawaii
Oahu
Molokai
Lanai
Kahoolawe
Midway Islands
Johnston Island
Palmyra Island
Christmas Island
Canton Island
Phoenix Islands
Howland Island
Baker Island
Jarvis Island
Line Islands
Fanning Island
Washington Island
Penrhyn Island
Manihiki
Rakahanga
Pukapuka
Nassau Island
Suwarrow Islands
Samoa Islands
Apia
Tutuila
Manua Islands
Tuamotu Archipelago
Makatea
Tahiti
Cook Islands
Rarotonga
Tonga Islands
Tubuai Islands
Austral Islands
Easter Island
Sala y Gomez
Marquesas Islands
Nuku Hiva
Ua Huka
Ua Pou
Fatu Hiva
Hiva Oa
Tahuata
Ua Pou
Nuku Hiva
Ua Huka

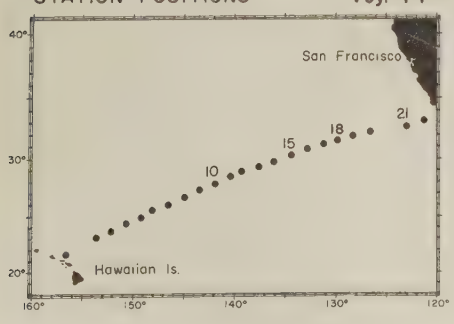
HONOLULU TO LOS ANGELES
OCTOBER 5-9, 1973
SS HAWAIIAN ENTERPRISE, Voyage 74

FIGURE 11

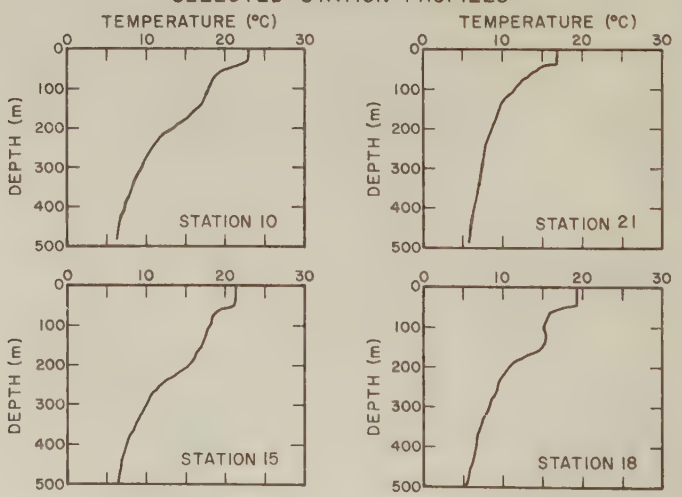




STATION POSITIONS Voy. 74

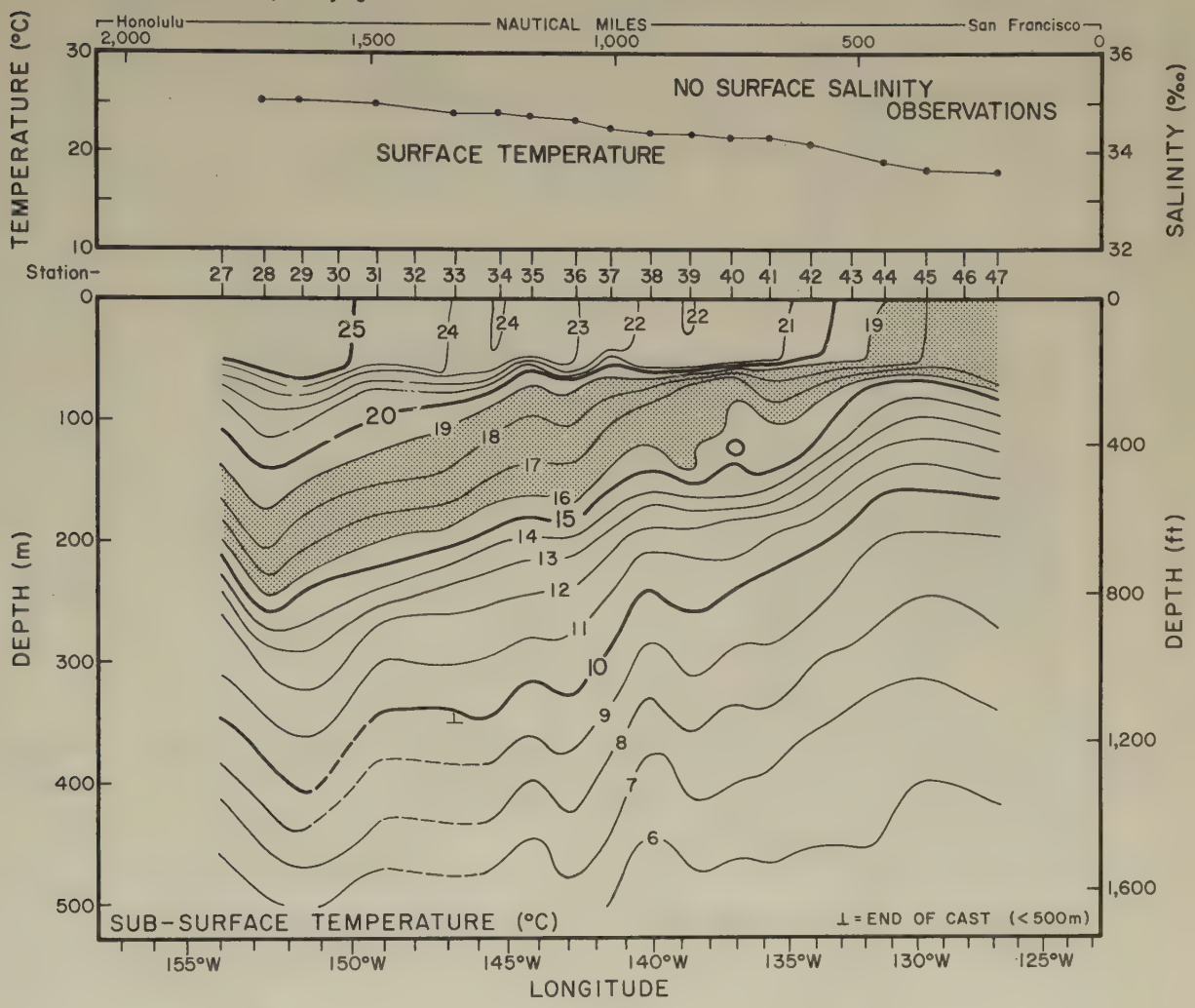


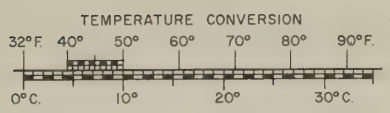
SELECTED STATION PROFILES

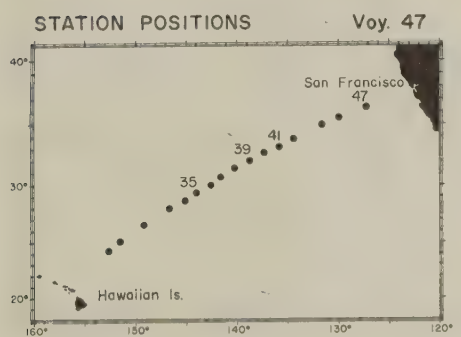


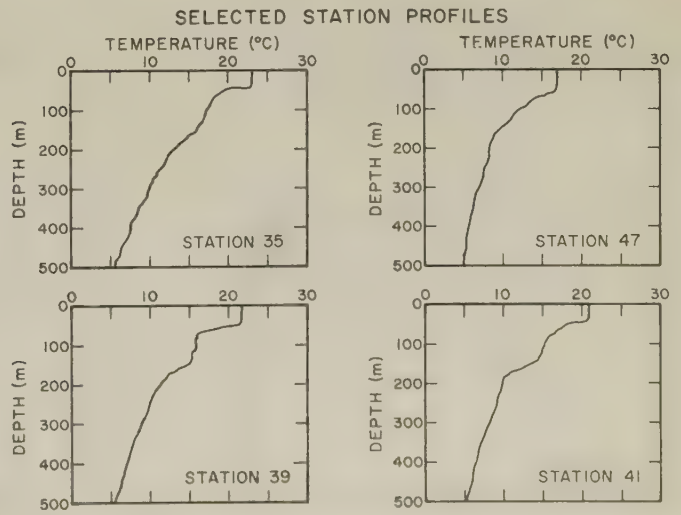
HONOLULU TO SAN FRANCISCO
· OCTOBER 12–16, 1973
· SS MONTEREY, Voyage 47

FIGURE 12



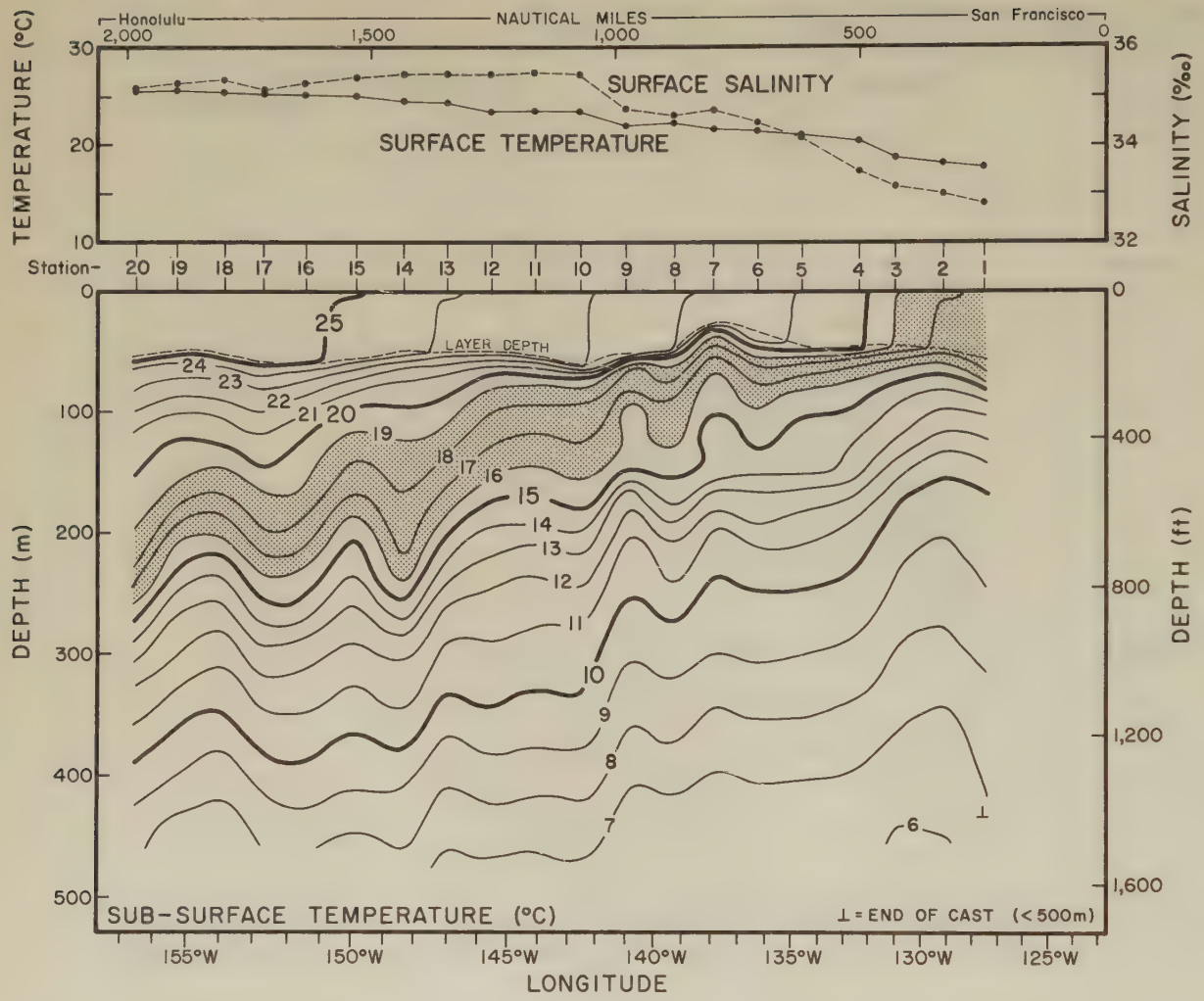


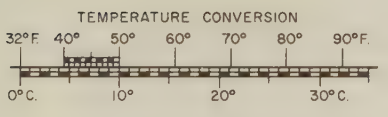


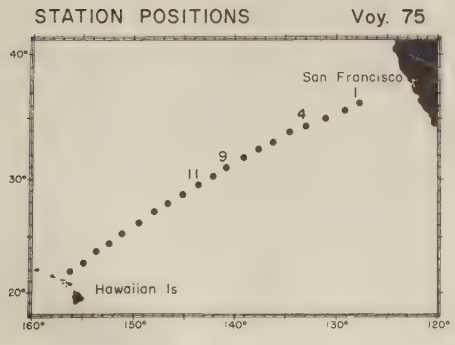


SAN FRANCISCO TO HONOLULU
·OCTOBER 13-17, 1973
·SS HAWAIIAN ENTERPRISE, Voyage 75

FIGURE 13







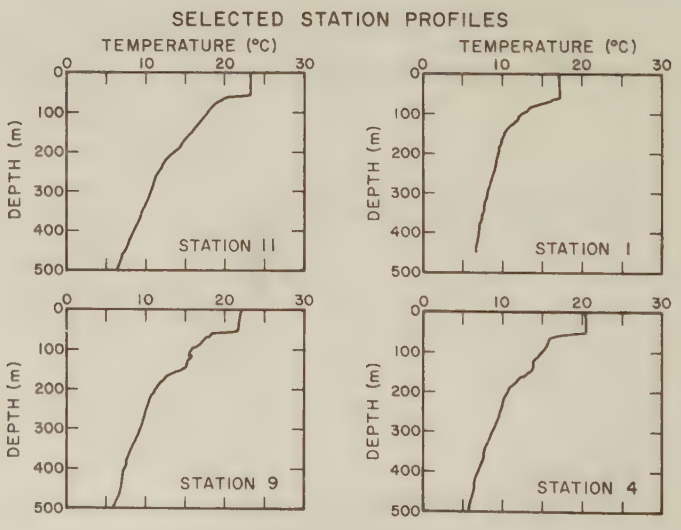
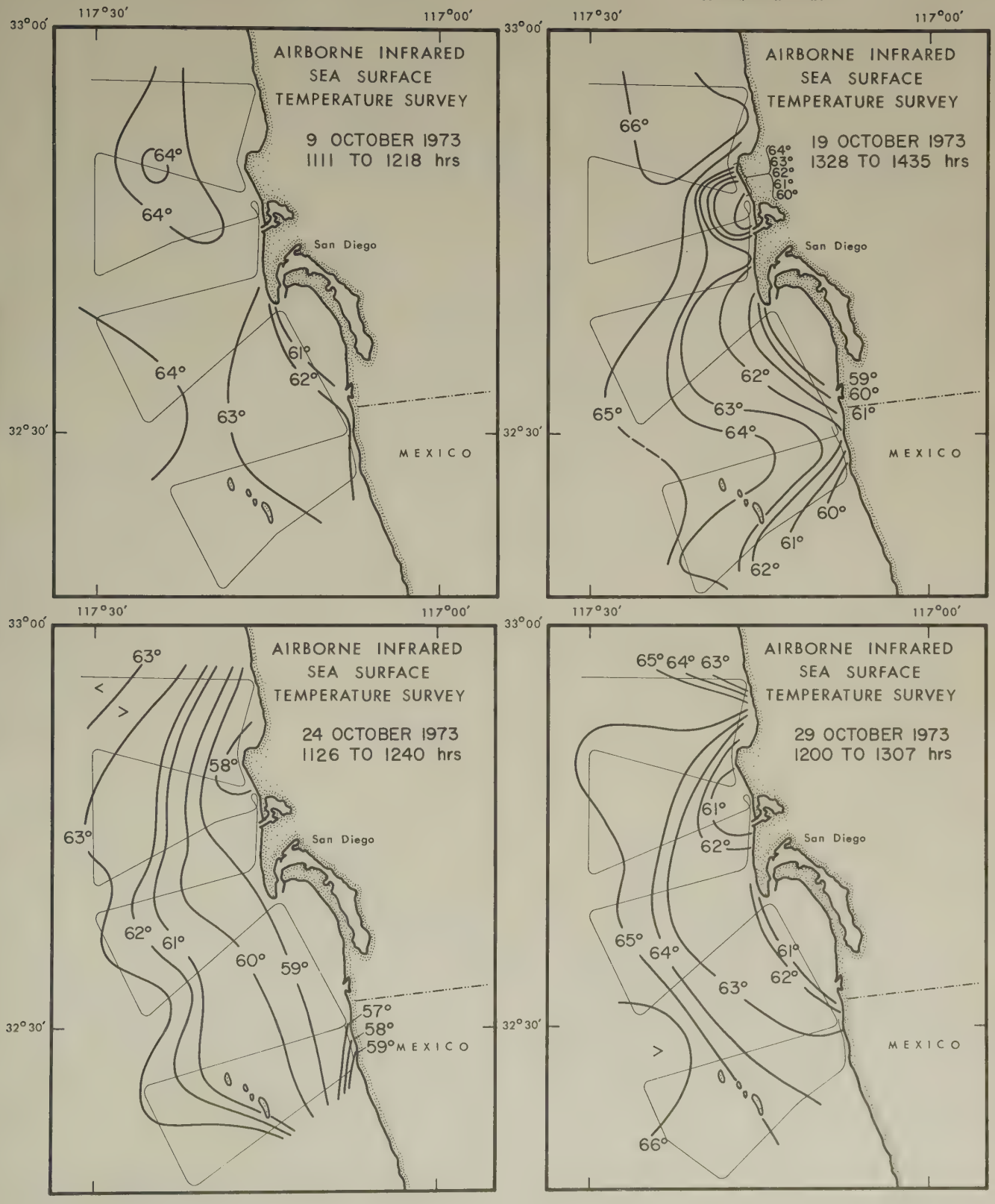
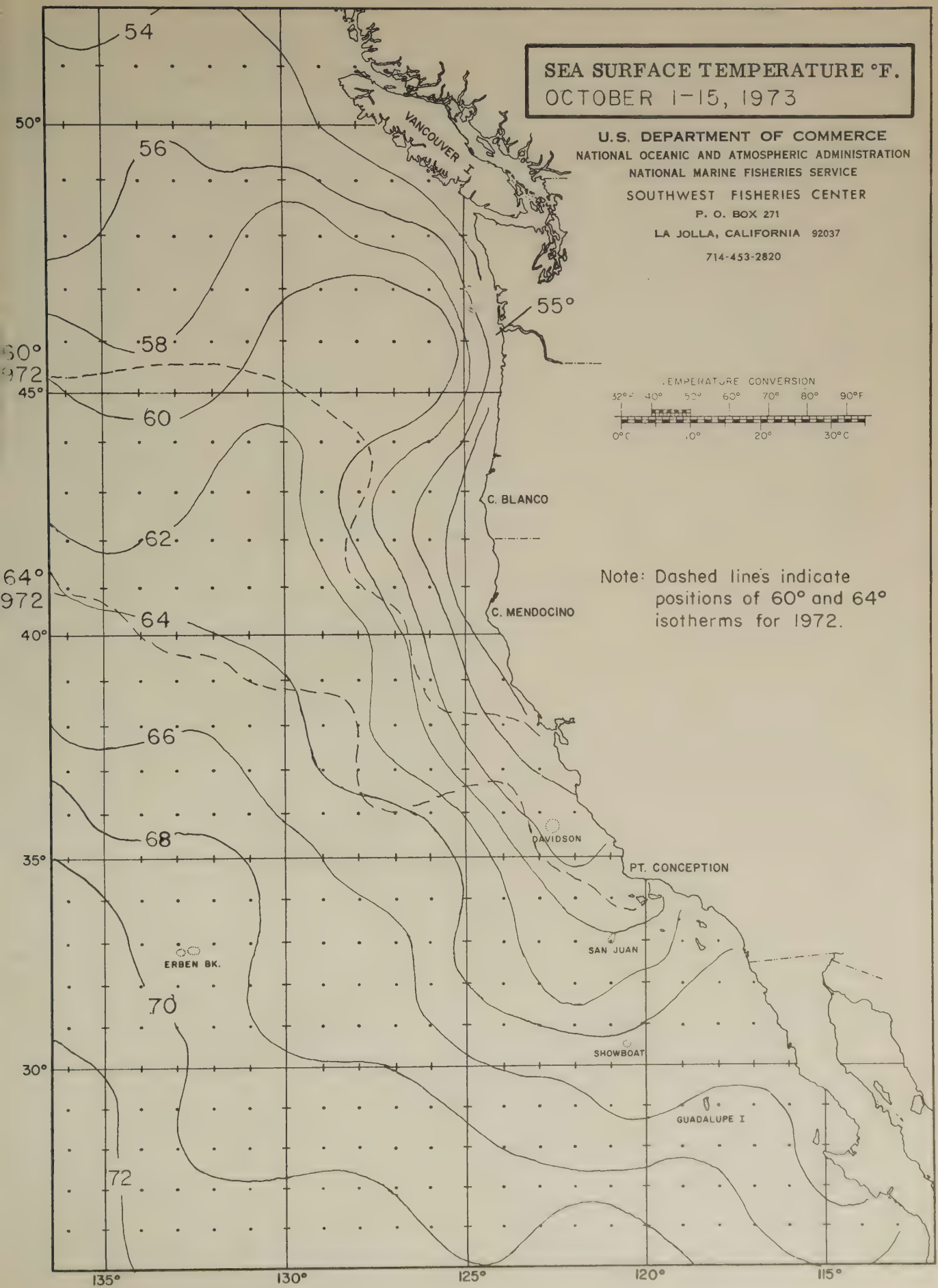


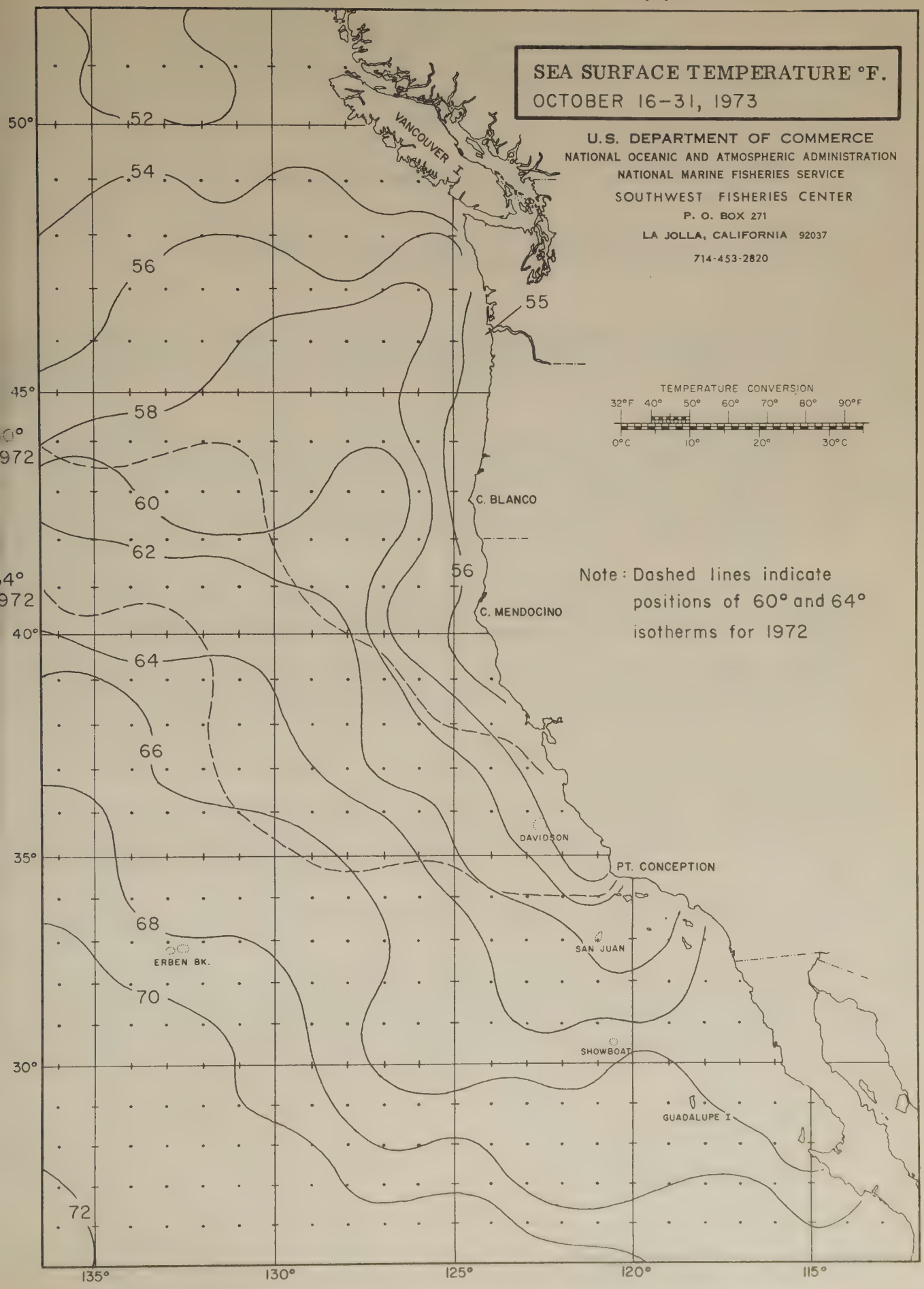
FIGURE 14 — OCTOBER 1973



FISHING INFORMATION – supplement



FISHING INFORMATION – supplement



UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center
La Jolla, California 92037

FISHING INFORMATION BULLETIN NO. 73-8

ALBACORE FISHING EFFORT BEGINS TO CONCENTRATE OFF CENTRAL CALIFORNIA

Poor weather hampered fishing along the entire coast during the last 2 weeks of September; however, scores were reported between the Columbia River and Newport and off Fort Bragg and Morro Bay. ered 60-150 fish catches were also reported near the Dellwood Knolls and off Cape Flattery in the third of September.

When boats were able to fish off the Pacific Northwest, high jigboat scores were 90-300 fish from) miles offshore between Astoria and Newport, and average catches were generally less than 100 fish ay on fish weighing 12-14 pounds. Albacore were also caught in smaller numbers between Newport and Bay and inside 50 miles off Newport. Baitboats had some days of 4-5 ton catches, and high catches were 10 tons from this area. Fish weighing 20 pounds and larger were caught off Astoria while mixed-size ore were taken off Newport.

The Fort Bragg area also produced good jigboat catches in spots when weather permitted fishing. Top scores were between 90-300 fish, and average catches were as high as 125 fish per boat per day on alba- weighing 12-13 pounds. Fishing was mainly 20-45 miles offshore from Gorda Seavalley to Fort Bragg.

Jigboat catches 80-120 miles west of Morro Bay were generally below 60 fish a day while baitboats aged 1-2 tons on albacore weighing more than 20 pounds. A large body of fish was reported to be scattered Point Conception to Davidson Seamount.

As of September 30, albacore landings for the west coast are estimated to be about 17,000 tons.

Prevailing weather conditions during the last 2 weeks of September allowed sea surface temperatures rm by 2°-4° F along the coast between Cape Flattery and Monterey. Consequently, temperatures that 2°-4° F below normal during the first half of September in this region approached normal values or rose ove normal levels during the second half of the month.

South of Monterey, surface temperatures decreased by 1°-2° F, and waters out to about 300 miles off ern California and northern Baja California are 2°-4° F below normal.

According to the Long-Range Prediction Group of the National Weather Service, weather conditions d improve for fishing off northern and central California during October. The more intense storm ms that develop in the Gulf of Alaska are expected to move into western Canada, and weather fronts that over the Pacific Northwest and into California should be less frequent than in September.

ber 2, 1973

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FISHING INFORMATION BULLETIN NO. 73-9

ALBACORE FISHING CONTINUES OFF CENTRAL CALIFORNIA, BUT CATCHES DECLINING

During the first 2 weeks of October the albacore fishery was centered 80-150 miles offshore ween Avila Beach and Morro Bay on mixed-size fish. However, fishing effort and catches decreased ing the past 2 weeks. On October 1-2 baitboats fishing about 80 miles off this area averaged 5-8 s per boat per day with high catches of approximately 12-16 tons. Jigboats at this time were working ut 50-60 miles further offshore and averaged 200 fish per day. Although many jumping and schooled were seen in these locations, fishing gradually decreased for baitboats as top catches went from tons on October 3 to 2-4 tons on October 14. Jigboat scores dropped abruptly to an average of 10-40 per day; however, some scores of 100 fish were reported in spots.

As catches decreased, boats began to fish farther offshore and more smaller fish were taken. rlier in the month many 22-25 pound fish and some 14-16 pounders were caught, but by October 14 oats were catching mostly 10-12 pounders from 130-150 miles off the coast. Baitboats had also ved to 100-110 miles offshore and continued to catch larger fish.

On October 8-9 a few jigboat scores of 100 fish were reported near Guide Seamount, but catches not persist. Only scattered scores of less than 100 fish were made off Triangle Island, Astoria, wport and Fort Bragg during October 1-14.

Seasonal cooling occurred in most offshore areas during the first 2 weeks in October, with sea face temperatures dropping 1°-2° F from values during the latter half of September. Frequent periods strong north-northwesterly winds increased upwelling between Cape Blanco and Point Sur, causing mperatures that were near or above normal to decrease to 1°-2° F below normal out to about 150 miles shore.

South of Point Conception seasonal cooling was retarded, and temperatures rose slightly in a oad band ranging between 150 and 250 miles wide off southern California and northern Baja California.

According to information supplied by the Long-Range Prediction Group of the National Weather rvice, the major storm systems that develop in the Gulf of Alaska are expected to move into southern aska and western Canada during the next few weeks. However, weather fronts that pass over the U.S. st coast are expected to occur at the normal frequency for this time of the year, and, consequently, hing off central California could be interrupted by periods of strong southwesterly winds and rough seas.

tober 16, 1973

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